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Chemical: LIGNOSULFONIC ACID



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a chemical name, CAS Number, or molecular formula. Use * for partial names (i.e. chloro*)

PE
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Synonyms: 58318-45-9, 8061-51-6, 8062-15-5, LIGNOSULFONIC ACID, LST 7, Lignin sulfonate, Ligninsulfonate, Ligninsulfonic acid, Lignosulfate, Lignosulfonate, Lignosulfuric acid, Poly (lignosulfonic acid), Protectol W, Sulfite lignin, 8062-15-5, AIDS-000665, AIDS000665, Ameribond 2X, Indulin SN, LS, LST 7, Lignosulfonate, Lignosulfonic acid, Poly(lignosulfonic acid), Protektol W, Sulfite lignin, Sulfolignin, Sulfonated lignin, Sulfonic acids, ligno, Sulfonyllignin, Wafex SR, 8062-15-5, AIDS-001469, AIDS001469, Ameribond 2X, Indulin SN, LST 7, Lignin, sulfite, Ligninsulfonate, Ligninsulfonic acid, Lignosulfate, Lignosulfonate, Lignosulfonic acid, Poly (lignosulfonic acid), Protektol W, Sulfite lignin, Sulfolignin, Sulfonic acids, ligno, Sulfonyllignin, Wafex SR

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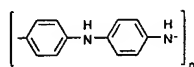
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Conducting Polymers

Polyanilines

Polyaniline

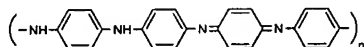
53,067-0 (Leucoemeraldine base polyaniline; LEB) 5 g
 CAS No. 25233-30-1
 $C_6H_8N_2$ FW 108.1
 Conducting polymer.
 Completely reduced form of polyaniline.
 solid
 mp >330 °C



Polyaniline (emeraldine base)

(emeraldine base polyaniline)
 CAS No. 5612-44-2
 $C_{12}H_{14}N_4$ FW 214.3
 Conducting Polymer. Undoped form.

Solubility
 NMP. soluble
 DMF. soluble
 THF. soluble
m-cresol. soluble
 DMSO. soluble
 DMAC. soluble



55,645-9 Average M_w ~5,000 5 g
 mp approx. 277 °C (dec.) 25 g
 λ_{max} 325 nm

47,670-6 Average M_w ~10,000 10 g
 solid 50 g
 mp 169 °C (dec.) (lit.)

55,637-8 Average M_w ~20,000 5 g
 λ_{max} 328 nm 25 g

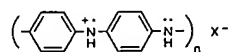
55,638-6 Average M_w ~50,000 5 g
 mp approx. 353 °C (dec.) 25 g
 λ_{max} 330 nm

53,068-9 Average M_w ~65,000 10 g
 Conducting Polymer. Undoped form. 50 g
 solid
 mp >350 °C (lit.)

57,637-9 Average M_w ~100,000 5 g
 Conductivity. 1×10^{-9} S/cm (pressed pellet, 25 g
 ASTM F8)
 λ_{max} 324 nm

57,647-6 Average M_w ~300,000 5 g
 25 g

Polyaniline (emeraldine salt)



42,832-9 Average M_w >15,000, powder 5 g
 (Infusible), particle size 3-100 μ m 25 g
 Additive in polymer blends and liquid
 dispersions for electromagnetic shielding, charge
 dissipation, electrodes, batteries and sensors.
 Form of polyaniline complexed (doped) with proprietary
 organic sulfonic acid
 Inherently conductive polymer.
 Stable at 100 °C and at 200 °C for short periods.
 Dispersed particles tend to reaggregate in molded articles
 forming conductive pathways. Acidic salt of an
 organic acid, incompatible with most bases.
 surface area. 5-20 m²/g
 Conductivity. 2-4 S/cm (compacted powder)
 mp >320 °C (dec.) (lit.)
 Density. 18.8 lb/cu. ft (lit.)
 Density. 1.36 g/mL (lit.)

57,707-3 coated on nylon powder 10 g
 Light colored conductive additive for
 thermoplastics and thermosets.
 Processible up to 150 °C
Solubility
 water. insoluble
 organic solvent. insoluble
 Extent of labeling. ~30 wt. % Nylon Polyaniline
 Conductivity. ~0.2 S/cm
 R: 37 S: 22-36

53,056-5 composite with carbon black 5 g
 Inherently conducting polymer based 25 g
 additive. Loading of polyaniline in carbon
 black typically 20%. Bulk conductivity 40 S/cm. Stable up
 to at least 300°C in air.
 Conductive additive for thermoplastics and thermosets.
 solid
 contains proprietary organic sulfonic acid
 mp >300 °C (lit.)

Polyaniline (emeraldine salt) long chain, grafted to lignin

CAS No. 335349-50-3
 $C_6H_8N_2$ FW 108.1
 Inherently conductive polymer. Redox active upto a pH of 9.
 Stable at 300°C for 30 mins. Insoluble in most solvents.
 Dispersible over a wide pH range in water and polar, protic
 organic solvents including isopropanol, DMSO, DMF, and NMP.
 Shake well before use.
 contains ligno-sulfonic acid and *para*-toluene sulfonic acid as
 dopant

56,111-8 approx. 20 wt. % in water, dispersion 10 g
 Particle size. approx. 2-3 μ m 50 g
 pH. approx. 1.7
 Conductivity. approx. 4-6 S/cm
 R: 37/38-41 S: 26-36

56,113-4 powder 2 g
 Particle size. 2-3 μ m 10 g
 pH. 1.9 (5 wt. % in water)
 Conductivity. 4-6 S/cm
 R: 37/38-41 S: 22-26-36

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Polyanilines

Polyaniline (emeraldine salt) short chain, grafted to lignin

CAS No. 313949-90-5

 $C_6H_8N_2$ FW 108.1

Inherently conductive polymer. Redox active upto a pH of 9. Stable at 300 °C for 30 mins. Insoluble in most solvents.

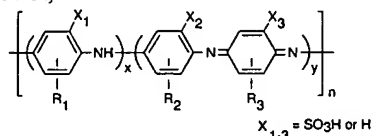
Dispersible over a wide pH range in water and polar, protic organic solvents including isopropanol, DMSO, DMF, and NMP. Shake well before use.

contains ligno-sulfonic acid as dopant

- 56,109-6 **approx. 20 wt. % in water, dispersion** 10 g
contains ligno-sulfonic acid as dopant 50 g
particle size. approx. 2-3 μ m
pH. approx. 2.3 (5 wt. % in water)
Conductivity. approx. 1-2 S/cm
R: 37/38-41 S: 26-36
- 56,112-6 **powder** 2 g
Particle size. 2-3 μ m 10 g
pH. 1.95 (5 wt. % in water)
Conductivity. 1-2 S/cm
R: 37/38-41 S: 22-26-36

Poly(anilinesulfonic acid) solution

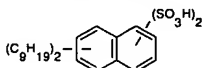
- 52,328-3 CAS No. 167860-86-8 50 mL
Average M_n 10,000 by GPC,
polyethylene oxide, 5 wt. % in water
Self-doped, conducting polymer.
Conductivity. 0.2-0.01 S/cm
bp. 100 °C/760 mm Hg (lit.)
Solubility
water. soluble
ethers and esters. insoluble
Extent of labeling. ~100% degree of sulfonation
Density. 1 g/mL (lit.)



Polyanilines: Dopants

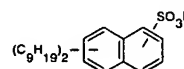
Dinonylnaphthalenedisulfonic acid solution

- 52,298-8 (DNNSA) 100 mL
CAS No. 60223-95-2
55 wt. % in isobutanol
Dopant for conducting polymers hydrophobic acid catalyst for amino cross-linked coatings
liquid
 n_D^{20} 1.476 (lit.)
bp. 101 °C/760 mm Hg (lit.)
Fp. 115 °F
Solubility
alcohols, glycol ethers, glycols, esters, ketones, aromatic and aliphatic hydrocarbons. soluble
water. insoluble
Density. 0.98 g/mL (lit.)
R: 10-34 S: 16-26-36/37/39-45



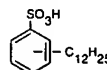
Dinonylnaphthalenesulfonic acid solution

- 52,296-1 (DNNSA) 100 mL
CAS No. 25322-17-2
 $C_{28}H_{44}O_3S$ FW 460.7
50 wt. % in heptane
Dopant for conducting polymers hydrophobic acid catalyst for amino cross-linked coatings
liquid
 n_D^{20} 1.465 (lit.)
bp. 94-99 °C/760 mm Hg (lit.)
Fp. 30 °F
Solubility
alcohols, glycol ethers, glycols, esters, ketones, aromatic and aliphatic hydrocarbons. soluble
water. insoluble
Density. 0.852 g/mL (lit.)
R: 10-37/38-41-51/53-65-67 S: 26-39-60-61-62



Dodecylbenzenesulfonic acid solution

- 52,295-3 CAS No. 27176-87-0 500 mL
70 wt. % in 2-propanol
Dopant for conducting polymers strong acid catalyst for amino cross-linked coatings
liquid
 n_D^{20} 1.479 (lit.)
bp. 82 °C/760 mm Hg (lit.)
Fp. 85 °F
Solubility
water, alcohols, glycol ethers, glycols, esters, ketones, aromatic and aliphatic hydrocarbons. soluble
Density. 0.992 g/mL (lit.)
R: 10-22-34 S: 16-26-36/37/39-45



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